Plant Risk Evaluator -- PRE™
Evaluation Report

Fallopia baldschuanica -- Washington

2022 Western IPM Grant Project

PRE Score: 15 -- Moderate Potential Risk
Confidence: 72 / 100
Questions answered: 19 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: September 12, 2022

This PDF was created on May 23, 2025

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Plant Evaluated

Fallopia baldschuanica

Image by Jan Samanek

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Fallopia baldschuanica*) in an effort to understand the invasive history, reproductive strategies, and the impact, if any, on the region's native plants and animals. This research reflects the data available at the time this evaluation was conducted.

Summary

A general note on Fallopia baldschuanica is that taxonomic revisions over time have led to appearance and use of multiple synonyms, all of which may appear in primary literature that are cited in this assessment: Bilderdykia aubertii (L. Henry) Moldenke, Fallopia aubertii (L. Henry) Holub, Polygonum aubertii L. Henry [KZ99], Polygonum baldschuanicum Regel. Most of the information on this species are not from species-specific studies, but rather where Fallopia baldschuanica was studied as part of a suite of species, often including or emphasizing the highly invasive relatives Reynoutria japonica and Fallopia x bohemica. Although F. baldschuanica is related to these species, an important distinction is that, as a climbing vine, F. baldschuanica requires structure – whether manmade or natural – to facilitate its occurrence. This is likely to help limit its establishment and spread. There is also limited evidence of spread and dispersal via fragmentation (natural or assisted by animals), or that seed production and germination feature reliably in propagation or spread. The primary traits that are associated with invasiveness by F. baldschuanica are that it is a popular garden ornamental that seems to be widely cultivated and planted, and its extremely rapid growth rate; both of these features increase the likelihood of escape from cultivated landscapes. Another intriguing but potentially problematic feature of F. baldschuanica is that – while it does not tend to be widespread in its adventive ranges - it seems to be particularly successful at pollinating the widespread and highly invasive R. japonica. The potential for increased hybridization of R. japonica and/or F. x bohemica as a result of higher prevalence of F. baldschuanica is considered a problem, particularly given expectations of changing climatic conditions.

General Information

Status: Completed
Screener: Lauren Kuehne
Evaluation Date: September 12, 2022

Plant Information

Plant: *Fallopia baldschuanica*

Regional Information

Region Name: Washington

Climate Matching Map

To answer four of the PRE questions for a regional evaluation, a climate map with three climate data layers (Precipitation, UN EcoZones, and Plant Hardiness) is needed. These maps were built using a toolkit created in collaboration with GreenInfo Network, USDA, PlantRight, California Invasive Plant Council, and The Information Center for the Environment at UC Davis.

Click here to see the generated climate matching map for this region. This climate match database is hosted by GreenInfo Network and publicly accessible.

Evaluation Questions

These questions are based on an article published by PLOS One, which can be found here: https://doi.org/10.1371/journal.pone.0121053.

Invasive History and Climate Matching (Questions 1 - 6)

1. Has the species (or cultivar or variety, if applicable; applies to subsequent "species" questions) become naturalized where it is not native?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Fallopia baldschuanicum is reported as being naturalized in 41 countries or states (CABI 2019) outside of central Asia, where it is native to Afghanistan, Tajikistan, and China.

Reference(s):

- CABI, Invasive Species Compendium (2022). Datasheet - Fallopia baldschuanica (Russian vine).

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2. Is the species (or cultivar or variety) noted as being naturalized in the US or world in a similar climate?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

In the US, it is reported in the northern states with moist and/or cold climates comparable with Washington: Oregon, Michigan, New York, Pennsylvania, and Massachusetts (USDA NRCS 2022). In Washington State, at least seven occurrences of naturalized plants have been previously detected based on herbarium records (Burke Museum 2022), and it is on the state Monitor List.

Reference(s):

- United States Department of Agriculture, Natural Resources Conservation Service (2022). NRCS Plants Database: Polygonum baldschuanicum Regel.
- Burke Museum Image Collection (2022). Burke Museum Herbarium Database: Fallopia baldschuanica.

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3. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

Reports on the invasiveness of Fallopia baldschuanica are mixed. Some state monitoring agencies in the US have reported that it is difficult to control and can become invasive when it becomes naturalized (King County 2022). Modeling work has suggested high potential for invasiveness in New England based on plant traits (i.e., growth rate, growth form, range, invasiveness elsewhere) (Martine et al. 2008). Some regional or global datasets list the species as invasive in a specific state (University of Georgia 2018) or country (Randall 2017), but the primary global invasive databases do not (CABI 2022, GISD 2017). Also, monitoring of naturalized populations showed no evidence of expansion over a three year period, a marked contrast to other Fallopia species (Tiebre et al. 2008). Other studies that have assessed distribution of multiple Fallopia species in Europe suggest that although Fallopia baldschuanica itself is not widespread, it seems to hybridize readily with more invasive Fallopia species (e.g., F. japonica) (Seiger 1993, Bailey et al. 2009), creating potential for hybrid adaptations that could increase invasiveness of the overall Fallopia complex, particularly as climate or environmental conditions change (Bailey et al. 2009, Tiebre et al. 2007).

Reference(s):

- King County Noxious Weed Control Program (2022). Silver lace vine identification and control.
- Martine, C. T., Leicht-Young S., Herron P., & Latimer A. (2008). Fifteen woody species with potential for invasiveness in New England. Rhodora. 110, 345–353.
- Tiébré, M-S., Saad L., & Mahy G. (2008). Landscape dynamics and habitat selection by the alien invasive Fallopia (Polygonaceae) in Belgium. Biodiversity and Conservation. 17(17), 2357–2370.
- Seiger, L. Anne (1993). The ecology and control of Reynoutria japonica (Polygonum cuspidatum).
- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- CABI, Invasive Species Compendium (2022). Datasheet - Fallopia baldschuanica (Russian vine).
- University of Georgia - Center for Invasive Species (2018). Polygonum baldschuanicum Regel. (Service, USDA. Animal and, Service USDA. Forest, Program USDA. Identifica, & Agriculture USDA. National I., Ed.).
- Global Invasive Species Database (0). GISD.
- Randall, R.P. (2017). A Global Compendium of Weeds. Third Edition..

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4. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

- Answer: **Yes**, which contributes **3** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Although the extent to which Fallopia baldschuanica will become invasive where it becomes naturalized is not well documented to date, reports of adventive and naturalized populations are common in areas with similar climate, and particularly latitudinal range, as Washington State. These include New England (Martine et al. 2008), Oregon (Zika and Alverson 2005), New Zealand (Healy 1963), and areas of Europe (Bailey et al. 2009, Teibre et al. 2007, 2008).

Reference(s):

- Healy, A. John (1963). Identification of polygonaceous weeds in New Zealand. Proceedings of the New Zealand Weed Control Conference.
- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Martine, C. T., Leicht-Young S., Herron P., & Latimer A. (2008). Fifteen woody species with potential for invasiveness in New England. Rhodora. 110, 345–353.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Zika, P. F., & Alverson E. R. (2005). Oregon. Madroño. 52, 273–274.
- Tiébré, M-S., Saad L., & Mahy G. (2008). Landscape dynamics and habitat selection by the alien invasive Fallopia (Polygonaceae) in Belgium. Biodiversity and Conservation. 17(17), 2357–2370.

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5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

F. baldschuanica is a member of Polygonaceae, sometimes classed as part of the "Fallopia complex", which includes highly invasive knotweeds including Reynoutria japonica (synonyms Fallopia japonica and Polygonum cuspidatum) and its many known hybrids (e.g., Fallopia x bohemica). These knotweeds are globally widespread, problematic invaders, that readily hybridize with F. baldschuanica and other members of the same genus (Seiger 1993, Bailey 2009, Tierbre 2007). Four of these species of knotweed are present and prevalent in Washington State (R. japonica, F. x bohemica, F. sachalinensis and P. wallichii) (King County 2022).

Reference(s):

- Seiger, L. Anne (1993). The ecology and control of Reynoutria japonica (Polygonum cuspidatum).
- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- King County Noxious Weed Control Program (2022). Invasive knotweed identification and control.

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6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There is a substantial overlap of global adventive occurrence of F. baldschuanica based on matching climate as assessed in the PRE Combined Data Layer.

Reference(s):

- [Anonymous] .

Impact on Native Plants and Animals (Questions 7 - 10)

7. Does this plant displace native plants and dominate (overtop or smother) the plant community in areas where it has established?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There are few articles in the primary literature that have assessed displacement of native vegetation by Fallopia baldschuanica, the only one where growth and expansion were assessed indicated that Fallopia baldschuanica was not widespread on the landscape and did not increase substantially over a three-year period (Tierbre et al. 2007). However, it is fast-growing (i.e., can increase in size by 15 feet a year), and as a climbing vine it has been noted as being able to overtop and cover other vegetation (King County 2022, Hyun et al. 2020, Martine et al. 2008).

Reference(s):

- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- King County Noxious Weed Control Program (2022). Silver lace vine identification and control.
- Tiébré, M-S., Saad L., & Mahy G. (2008). Landscape dynamics and habitat selection by the alien invasive Fallopia (Polygonaceae) in Belgium. Biodiversity and Conservation. 17(17), 2357–2370.
- Martine, C. T., Leicht-Young S., Herron P., & Latimer A. (2008). Fifteen woody species with potential for invasiveness in New England. Rhodora. 110, 345–353.

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8. Is the plant noted as promoting fire and/or changing fire regimes?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

There is no information or studies that have specifically assessed the impact of F. baldschuanica on fire regimes. However, knotweed species in general are not mentioned in studies of increased fire danger due to invasive species, suggesting that the risk is low.

Reference(s):

- [Anonymous] .

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9. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

One management agency reports potentially toxic effects, noting that F. baldschuanica contains "oxalates that if eaten in large amounts may cause kidney disease or low calcium or magnesium levels in livestock, dogs or other animals" (King County 2022). However, most of the available peer-reviewed studies on F. baldshuanica (synonym F. aubertii) have instead emphasized potentially medicinal uses, and - although cytotoxic effects are present - do not mention acute toxicity to humans or animals (e.g., Wang et al. 2019, Olaru et al. 2015). As a climbing vine, F. baldschuanica is noted as overtaking areas such as roadside ditches, walls, and landscaping structures, making it unlikely to be widely distributed in grazing habitats (Hyun et al. 2020). However, given the possibility of cytotoxic effects, using livestock to control F. baldschuanica (or other knotweeds) may not be advisable (e.g., McDonald 2018).

Reference(s):

- King County Noxious Weed Control Program (2022). Silver lace vine identification and control.
- Olaru, O. Tudorel, Venables L., Van De Venter M., Nitulescu G. Mihai, Margina D., Spandidos D. A., et al. (2015). Anticancer potential of selected Fallopia Adans species. Oncology Letters. 10, 1323–1332.
- Wang, J., Ma G., & Hu J. (2019). Phytochemical and chemotaxonomic study on Fallopia aubertii (L. Henry) Holub. Biochemical Systematics and Ecology. 85, 50–53.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- McDonald, C. (2018). The Surprising Toll of Invasive Species. Risk Management. 65, 4–7.

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10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

Fallopia baldschuanica is a climbing vine that requires some structure - whether natural (trees, hedges, other vegetation) or manmade (fences, walls, landscaping structures) (Hyun et al. 2020, King County 2022). It is fast growing and has the potential to overtop and displace other vegetation, which suggests that it can form thickets under some conditions, but evidence is currently lacking as to how often or likely this is to happen.

Reference(s):

- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- King County Noxious Weed Control Program (2022). Silver lace vine identification and control.

Reproductive Strategies (Questions 11 - 17)

11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Like other knotweed species, Fallopia baldschuanica is able to reproduce vegetatively from rhizome and/or stem fragments (Hyun et al. 2020, King County 2022, Tierbre et al. 2007).

Reference(s):

- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- King County Noxious Weed Control Program (2022). Silver lace vine identification and control.

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12. If naturally detached fragments from this plant are capable of producing new plants, is this a common method of reproduction for the plant?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Although there are not many studies that have evaluated natural occurrence or expansion of Fallopia baldschuanica in it's non-native range, they do consistently report that it is rare, and that occurrence seems to be associated with escape or cultivation from ornamental gardens or landscaping (Teirbre et al. 2007, Lamberti-Raverot et al. 2017, Bailey et al. 2009). This rarity and lack of rapid dispersal suggests that fragmentation is not a common form of reproduction or spread.

Reference(s):

- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Saad L., & Mahy G. (2008). Landscape dynamics and habitat selection by the alien invasive Fallopia (Polygonaceae) in Belgium. Biodiversity and Conservation. 17(17), 2357–2370.
- Lamberti-Raverot, B., Piola F., Thiébaut M., Guillard L., Vallier F., & Puijalon S. (2017). Water dispersal of the invasive complex Fallopia: The role of achene morphology. Flora. 234, 150–157.

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13. Does the species (or cultivar or variety) commonly produce viable seed?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Viable flower, pollen, and seed production (ie, fruit set) are indicated by both primary literature studies (Hyun et al. 2020, Teibre et al. 2007, Bailey et al. 2009) as well as gardening websites.

Reference(s):

- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- King County Noxious Weed Control Program (2022). Silver lace vine identification and control.

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14. Does this plant produce copious viable seeds each year (> 1000)?

Answer / Justification:

There are no estimates of seed density in the literature for Fallopia baldschuanica. The nearest estimate is for the related invasive knotweed Reynoutria japonica, which is estimated to produce 1974+1133 seeds/m2 (Engler et al. 2011). Seeds of F. baldschuanica are larger than R. japonica (2-4 mm vs. 2.5 mm) (Hyun et al. 2020), and descriptions of the plant on gardening websites or weed control and management sites do not suggest production of particularly abundant or copious viable seeds, however.

Reference(s):

- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- Engler, J., Abt K., & Buhk C. (2011). Seed characteristics and germination limitations in the highly invasive Fallopia japonica sl (Polygonaceae). Ecological Research. 26, 555–562.

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15. Is there significant germination (>25%) of seeds the next growing season, with no requirement of an infrequent environmental condition for seeds to germinate (i.e. fire) or long dormancy period?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Based on recommendations from gardening websites, germination from seed is possible, but is not the most common or successful method of spread or propagation, as is the case with other knotweed species. This is supported by a peer-reviewed study that found that Fallopia baldschuanica produced seeds but with 0% successful germination (in compost) the following year (Tiebre et al. 2007).

Reference(s):

- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.

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16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very Low** confidence in this answer based on the available literature.

Answer / Justification:

There are no studies that specifically assess the amount of time needed to produce seeds, for Fallopia baldschuanica or for related species. It is a fast-growing plant, however, and viable flower, pollen, and seed production (ie, fruit set) are indicated as being common (Hyun et al. 2020, Teibre et al. 2007, Bailey et al. 2009).

Reference(s):

- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.

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17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

The fruiting period is noted as lasting 3 months, between August and October (Hyun et al. 2020).

Reference(s):

- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.

Dispersal (Questions 18 - 20)

18. Are the plant's propagules frequently dispersed long distance (>100 m) by mammals or birds or via domestic animals?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

There are no noted occurrences in the literature of distribution or movement of propagules by animals, and most occurrences seem to be associated with escape from cultivated landscapes (Bailey et al. 2009; Tiebre et al. 2007, 2008; Engler et al. 2011; Lamberti-Raverot et al. 2017, Hyun et al. 2020). There is no indication that the plant or fruits are highly edible or sought after by wild or domestic animals, reducing risk of fragmentation and movement as part of foraging.

Reference(s):

- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the "Battle of the Clones". Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Tiébré, M-S., Saad L., & Mahy G. (2008). Landscape dynamics and habitat selection by the alien invasive Fallopia (Polygonaceae) in Belgium. Biodiversity and Conservation. 17(17), 2357–2370.
- Engler, J., Abt K., & Buhk C. (2011). Seed characteristics and germination limitations in the highly invasive Fallopia japonica sl (Polygonaceae). Ecological Research. 26, 555–562.
- Lamberti-Raverot, B., Piola F., Thiébaut M., Guillard L., Vallier F., & Puijalon S. (2017). Water dispersal of the invasive complex Fallopia: The role of achene morphology. Flora. 234, 150–157.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.

19. Are the plant's propagules frequently dispersed long distance (>100 m) by wind or water?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

There are no noted occurrences in the literature of distribution or movement of propagules by wind or water (ie., along riparian corridors), and most occurrences seem to be associated with escape from cultivated landscapes (Bailey et al. 2009; Tiebre et al. 2007, 2008; Engler et al. 2011; Lamberti-Raverot et al. 2017, Hyun et al. 2020). Fragmentation and seed production/germination are not indicated as primary sources of spread, reducing the likelihood of dispersal by wind or water.

Reference(s):

- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the "Battle of the Clones". Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Tiébré, M-S., Saad L., & Mahy G. (2008). Landscape dynamics and habitat selection by the alien invasive Fallopia (Polygonaceae) in Belgium. Biodiversity and Conservation. 17(17), 2357–2370.
- Engler, J., Abt K., & Buhk C. (2011). Seed characteristics and germination limitations in the highly invasive Fallopia japonica sl (Polygonaceae). Ecological Research. 26, 555–562.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- Lamberti-Raverot, B., Piola F., Thiébaut M., Guillard L., Vallier F., & Puijalon S. (2017). Water dispersal of the invasive complex Fallopia: The role of achene morphology. Flora. 234, 150–157.

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20. Are the plant's propagules frequently dispersed via contaminated seed (agriculture or wildflower packets), equipment, vehicles, boats or clothing/shoes?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

There are no noted occurrences in the literature of distribution or movement of propagules by human vectors other than that associated with escape from cultivated or landscaped areas (Bailey et al. 2009; Tiebre et al. 2007, 2008; Engler et al. 2011; Lamberti-Raverot et al. 2017, Hyun et al. 2020). Fragmentation and seed production/germination are not indicated as primary sources of spread, reducing the likelihood of dispersal by accidental attachment to equipment or vehicles.

Reference(s):

- Bailey, J. P., Bímová K., & Mandák B. (2009). Asexual spread versus sexual reproduction and evolution in Japanese Knotweed sl sets the stage for the “Battle of the Clones”. Biological invasions. 11, 1189–1203.
- Tiébré, M-S., Vanderhoeven S., Saad L., & Mahy G. (2007). Hybridization and sexual reproduction in the invasive alien Fallopia (Polygonaceae) complex in Belgium. Annals of Botany. 99(99), 193–203.
- Tiébré, M-S., Saad L., & Mahy G. (2008). Landscape dynamics and habitat selection by the alien invasive Fallopia (Polygonaceae) in Belgium. Biodiversity and Conservation. 17(17), 2357–2370.
- Engler, J., Abt K., & Buhk C. (2011). Seed characteristics and germination limitations in the highly invasive Fallopia japonica sl (Polygonaceae). Ecological Research. 26, 555–562.
- Hyun, JY., Yoon CY., & Kim J-H. (2020). The report on the taxonomic characters, ecological risk and weed risk assessment of putative invasive alien plants which are designated in law by the Ministry of Environment in Korea as environmentally harmful species (II). Korean Journal of Plant Resources. 33, 200–219.
- Lamberti-Raverot, B., Piola F., Thiébaut M., Guillard L., Vallier F., & Puijalon S. (2017). Water dispersal of the invasive complex Fallopia: The role of achene morphology. Flora. 234, 150–157.

Total PRE Score

PRE Score: 15 -- Moderate Potential Risk
Confidence: 72 / 100
Questions answered: 19 of 20 -- Valid (80% or more questions answered)

PRE Score Legend

The PRE Score is calculated by adding the point totals for each (answered) question.
< 13 : Low Potential Risk
13 - 15 : Moderate Potential Risk
> 15 : High Potential Risk

Questions Answered Legend

It is important to answer at least 16 questions to consider a PRE Score as "valid".
>= 16 : valid (80% or more questions answered)
<= 15 : invalid (not enough questions answered)

Organization Ownership and Content Privacy

Organization: 2022 Western IPM Grant Project
Content Privacy: Public

Evaluation Reviewers

The PRE approach is to base decisions on science and make decisions by consensus of diverse horticultural stakeholders. The literature review and process of answering PRE's questions are based on science; the decisions of which plants to prioritize are based on consensus. To ensure this process is in place and that PRE is collaborative, volunteer stakeholders are recruited from each region to review evaluations. The following experts in their profession (plant science, conservation, or horticultural trade) have participated as volunteer PRE reviewers for this evaluation:

• Jutta Burger	October 14, 2022
• Lynn Sweet	October 13, 2022
• Alex Simmons	September 27, 2022
• Wendy Descamp	September 21, 2022

This evaluation has a total of 4 reviewer(s).

Evaluation Issues

The following section lists all public issues for this evaluation. Issues provide a way for stakeholder reviewers to communicate any concerns or suggestions they might have with the plant or evaluation. Please email info@plantright.org if additional action is required to resolve open issues.

Issue ID # 8287

Date Created: October 13, 2022 - 6:52pm
Date Updated: November 10, 2022 - 5:20pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

Issue Description

I think this should be very low confidence or blank due to lack of evidence. - Lynn

Issue Resolution (Screener's Response to Issue)

I left the answer blank as suggested, but left the explanation (as suggested by another reviewer).

Issue ID # 8286

Date Created: October 13, 2022 - 6:39pm
Date Updated: November 10, 2022 - 5:14pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Suggestion

Severity: Major
Scope: Q03. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

Issue Description

On the topic brought up by the other reviewers, I think that if the modeling was life-history based as implied, OK. Does it smother native vegetation as a vine, and is there evidence it does so? Maybe adding another detail from that reference would be good. Of course, some models just predict spread, that's not enough. My gut is that this is a yes from the other evidence but Medium or even Low I think unless we have specifics. -Lynn

Issue Resolution (Screener's Response to Issue)

I changed the confidence to Low (for this and other reasons), but specifically to address this issue, I also added the specific traits that were used to determine invasiveness in the modeling:

Modeling work has suggested high potential for invasiveness in New England based on plant traits (i.e., growth rate, growth form, range, invasiveness elsewhere) (Martine et al. 2008).

Issue ID # 8245

Date Created: October 10, 2022 - 7:31am
Date Updated: November 10, 2022 - 12:37pm

Submitted by: Jutta Burger

Status: Fixed
Type: Comment
Severity: Minor
Scope: Evaluation as a whole

Issue Description

Make sure that references that you provide about species-specific characteristics relate to the species being evaluated and not just close relatives of it (except of course for Q5). You're familiar with the lit for this species so you'll know best which do and don't. - Jutta

Issue Resolution (Screener's Response to Issue)

There was one instance (Q14) where the information was not specific to F. baldshuanica, but knotweeds

generally. So I've removed that sentence: "Reproduction via seed production and germination are not indicated as being an important mode of spread for knotweed species generally (Engler et al. 2011, Tiebre et al. 2007, Bailey et al. 2009)."

There is one mention and citation that is not specific to F. baldschuanica, in the same question, which is: "There are no estimates of seed density in the literature for Fallopia baldschuanica. The nearest estimate is for the related invasive knotweed Reynoutria japonica, which is estimated to produce 1974+1133 seeds/m2 (Engler et al. 2011)." I think the statement is clear enough that the seed estimate is not for F. baldschuanica and is only being used because there isn't information available, but maybe even this is too suggestive or speculative?

Other than Q14, I've audited all the citations, and they all include information specific to F. baldschuanica vs. related species only.

Issue ID # 8244

Date Created: October 10, 2022 - 7:28am
Date Updated: November 9, 2022 - 3:27pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

Issue Description

The information that I have found on this species in its introduced range in California (Jepson Manual), specifies a flowering period of only 3 months. - Jutta

Issue Resolution (Screener's Response to Issue)

Thank you - I had noted the period August to October, but must have miscounted it as 4 months! I removed the first reference to a long flowering period, and left the second one that notes the same

flowering period as the Jepson Manual. I did not include Jepson Manual as a citation, since it seemed redundant.

Issue ID # 8243

Date Created: October 10, 2022 - 7:20am
Date Updated: November 10, 2022 - 5:20pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q14. Does this plant produce copious viable seeds each year (>1000)?

Issue Description

As Wendy suggests, it might be better to just stick with leaving the answer (and confidence) blank here. You can still keep the explanation since it provides some useful information. Side-note: saying that seeds are larger may not be justified if seed size range overlaps. - Jutta

Issue Resolution (Screener's Response to Issue)

Have left this blank as suggested, but left the explanation - I also edited the explanation very slightly to make the "no available seed estimates" more prominent.

Issue ID # 8233

Date Created: October 3, 2022 - 6:00pm
Date Updated: November 10, 2022 - 10:43am

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion
Severity: Minor
Scope: Q10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

Issue Description

Consider reducing confidence -- or reconsidering the answer -- since it's growth habit (a vine that overtops) suggests that it could create thickets. The following comment was associated with the PRE for F. b. conducted in 2016 for California, "After talking with Michael Chasse who is managing this species in the Presidio, the answer for this question should be changed to yes. This species does in fact form impenetrable thickets. - Alison Forrestel." We could check with these folks again to see if they still think this species is overtopping. - Jutta

Issue Resolution (Screener's Response to Issue)

I changed the confidence to Low (although strongly considered Very Low as well), and edited the answer to say that evidence is lacking as to how often it forms thickets. I think that it would not be a bad idea to re-check with folks that have experience with naturalized populations, as that could be included as evidence for changing the answer from No to Yes.

Revised answer:

"Fallopia baldschuanica is a climbing vine that requires some structure - whether natural (trees, hedges, other vegetation) or manmade (fences, walls, landscaping structures) (Hyun et al. 2020, King County 2022). It is fast growing and has the potential to overtop and displace other vegetation, which suggests that it can form thickets under some conditions, but evidence is currently lacking as to how often or likely this is to happen."

Issue ID # 8232

Date Created: October 3, 2022 - 5:42pm
Date Updated: November 9, 2022 - 12:40pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q07. Does this plant displace native plants and dominate the plant community in areas where it

has been established?

Issue Description

If you are primarily using inference to answer this question, consider reducing confidence to "Medium". - Jutta

Issue Resolution (Screener's Response to Issue)

Thank you for the clarification. Yes, it was inference, based more on potential to displace and dominate other plants. Reduced confidence to Medium as suggested.

Issue ID # 8231

Date Created: October 3, 2022 - 5:34pm
Date Updated: November 9, 2022 - 3:31pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q06. Is the species found predominately in a climate matching the region of concern?

Issue Description

Suggest reducing confidence to Medium. It can't be "very high" because the climate match evaluation for WA is itself not a peer reviewed product. Also, though it looks like more than half of F. b.'s occurrences (hexagons) overlap with WA climate, there are many hexagons that do not, therefore the relationship is not that tight. - Jutta

Issue Resolution (Screener's Response to Issue)

Thank you for the clarification, reduced to Medium confidence as suggested.

Issue ID # 8230

Date Created: October 3, 2022 - 5:26pm
Date Updated: November 10, 2022 - 5:12pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q03. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

Issue Description

I agree with both you, Lauren, and Wendy on the difficulty of this question for this particular species. "Yes" with medium confidence seems appropriate here, because there is some evidence that the species has become invasive in some areas (and carries with it the threat of hybridization). I would add one or two of the world and regional databases as references. For instance, invasives.org (https://www.invasive.org/browse/subinfo.cfm?sub=18463) lists F. baldschuanica as being on NJ's invasive species strike team list (though this is not an impact it is an indication it is perceived as a threat). Randall's Global Compendium of Weeds (2017) lists F. b. as having been identified as invasive in Spain. That said, neither CABI nor the Global Invasive Species Database list it as invasive per se. If you have local evidence that it is displacing natives or causing economic harm, that is also evidence that has "medium" confidence. - Jutta

Issue Resolution (Screener's Response to Issue)

I changed the Confidence to Low, and also added additional references along with the addition of the information that it is listed as invasive in some specific states/regions but not in the global databases. The revised answer is now:

"Reports on the invasiveness of Fallopia baldschuanica are mixed. Some state monitoring agencies in the US have reported that it is difficult to control and can become invasive when it becomes naturalized (King County 2022). Modeling work has suggested high potential for invasiveness in New England based on plant traits (i.e., growth rate, growth form, range, invasiveness elsewhere) (Martine et al. 2008). Some regional or global datasets list the species as invasive in a specific state (University of Georgia 2018) or country (Randall 2017), but the primary global invasive databases do not (CABI 2022, GISD 2017). Also, monitoring of naturalized populations showed no evidence of expansion over a three year period, a marked contrast to other Fallopia species (Tiebre et al. 2008). Other studies that have assessed distribution of multiple Fallopia species in Europe suggest that although Fallopia baldschuanica itself is not widespread, it seems to hybridize readily with more invasive Fallopia species (e.g., F. japonica) (Seiger 1993, Bailey et al. 2009), creating potential for hybrid adaptations that could increase invasiveness of the overall Fallopia complex, particularly as climate or environmental conditions change (Bailey et al. 2009, Tiebre et al. 2007)."

Issue ID # 8229

Date Created: October 3, 2022 - 4:25pm
Date Updated: November 9, 2022 - 3:14pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q02. Is the species (or cultivar or variety) noted as being naturalized elsewhere in the US or world in a similar climate?

Issue Description

The reference to other states is only relevant for this particular ("similar climate") question if these states have a similar climate. Perhaps instead list the states that it has naturalized in that have similar climate. - Jutta

Issue Resolution (Screener's Response to Issue)

Instead listed the five northern states with moist and/or cold climates.

Issue ID # 8228

Date Created: October 3, 2022 - 4:06pm
Date Updated: November 9, 2022 - 12:30pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Regional Information

Issue Description

Add the url for the species & state-level search into the "PRE Climate Match external link" box. In this way, anyone clicking the link will immediately see climate match results for your species / region on the webtool. - Jutta

Issue Resolution (Screener's Response to Issue)

I see - I had put the link to only the Climate Match Tool, not the state and species-specific search. I found where to obtain that link in the Climate Match Tool, and have updated the Evaluation by putting the specific link in.

Issue ID # 8192

Date Created: September 21, 2022 - 11:52am
Date Updated: November 9, 2022 - 12:21pm

Submitted by: Wendy Descamp

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q19. Are the plant’s propagules frequently dispersed long distance (>100 m) by wind or water?

Issue Description

Lauren, you have done a fantastic job with references throughout the PRE. If it saves time, for a question like this, you can stick to just listing two or three references unless you feel all are important to include.

Issue Resolution (Screener's Response to Issue) No revision was suggested; I'll keep the recommendation in mind for future, but I generally prefer to be as inclusive as possible with references, to support my own and others' confidence in conclusions.

Issue ID # 8191

Date Created: September 21, 2022 - 11:51am
Date Updated: November 9, 2022 - 3:37pm

Submitted by: Wendy Descamp

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

Issue Description

Hi Lauren, I agree with your deduction here but in the PRE guidance, it does say: "If there is no information, either in the literature or observationally, then leave answer field blank." I wonder if a blank field is a better option for the PRE given what you found?

Issue Resolution (Screener's Response to Issue)

I tried to leave the screener Confidence field blank, but it defaults to Very Low?

Issue ID # 8190

Date Created: September 21, 2022 - 11:49am
Date Updated: November 10, 2022 - 5:16pm

Submitted by: Wendy Descamp

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q03. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

Issue Description

Hi Lauren, I think this is a tricky question in regard to this species. You provide an excellent answer with the available research and I understand why you answered 'yes' with a confidence level of medium given, as you note, the mixed reports available.
My only reservation is can we use modeling data that predicts invasiveness to essentially count as

invasiveness to answer this question. The 'How to answer PRE questions' guidance document notes for questions 3: "For a plant to be considered invasive, it must cause significant economic or environmental damage (see PRE Glossary for detailed definition). If there is no evidence for this anywhere in the world, then the answer is no. It may be considered widespread; however, if there is no evidence that it causes damage, then the answer is still no."
I think in King County we can see it being considered invasive (though we don't have specifics on impacts) and that is valid. Is that enough as the other information on it being invasive is more predictive - or am I not giving enough credit to that information. I don't know, I'm wondering what Jutta and/or Alex think about this - I believe they will also review - and see if they recommend leaving as-is or maybe lowering the confidence level.

Issue Resolution (Screener's Response to Issue)

I reduced the Confidence to Low, added the plant traits used in the modeling, and added some more specific information about how some databases and datasets list the species as invasive while others do not. The revised answer is:

"Reports on the invasiveness of Fallopia baldschuanica are mixed. Some state monitoring agencies in the US have reported that it is difficult to control and can become invasive when it becomes naturalized (King County 2022). Modeling work has suggested high potential for invasiveness in New England based on plant traits (i.e., growth rate, growth form, range, invasiveness elsewhere) (Martine et al. 2008). Some regional or global datasets list the species as invasive in a specific state (University of Georgia 2018) or country (Randall 2017), but the primary global invasive databases do not (CABI 2022, GISD 2017). Also, monitoring of naturalized populations showed no evidence of expansion over a three year period, a marked contrast to other Fallopia species (Tiebre et al. 2008). Other studies that have assessed distribution of multiple Fallopia species in Europe suggest that although Fallopia baldschuanica itself is not widespread, it seems to hybridize readily with more invasive Fallopia species (e.g., F. japonica) (Seiger 1993, Bailey et al. 2009), creating potential for hybrid adaptations that could increase invasiveness of the overall Fallopia complex, particularly as climate or environmental conditions change (Bailey et al. 2009, Tiebre et al. 2007)."

About PRE and this Plant Evaluation Report

The Plant Risk Evaluator (PRE) is an online database and platform designed to assess the risk of a plant becoming invasive in a given region.This tool offers many benefits, and we encourage you to visit the PRE website (https://pretool.org) for more information.

If you would like to learn more about PRE, please email us at info@plantright.org, requesting a PRE Account.

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